

*The Optimal Reference Guide*

# **Statewide Student Identifier Systems**

A Best Practices Paper by ESP Solutions Group

Glynn D. Ligon, Ph.D.  
Barbara S. Clements, Ph.D.



**ESP Solutions Group**



Overview	1
The Case for Student Identifiers	2
Historical Context	3
Confidentiality	4
Data Access and Use Policies	4
The Nature of Statewide Student Identifiers	5
What are essential characteristics of a student identifier?	5
Options for Selecting a Student Identifier	6
Issues for States	10
Batch Processing	16
Student Record Submissions and Identifier Assignments	17
The Matching Process	17
No Child Left Behind Data Elements	18
Pre-Coding Assessment Documents	19
Iowa Case Study	24
Involving Software Vendors	25
Coordination Between the State and the Districts	26
Buy or Build a Student Locator System?	26
Requirements for a Request for Proposals	27
Schools Interoperability Framework (SIF)	27
Training	28
Afterword	28
Glossary of Terms Used with Statewide Student Identifiers	29



This ESP Solutions Group brief analyzes issues that states encounter when assigning unique statewide student identifiers. The community of state education agencies has become more enlightened about the breadth and complexity of these issues since the passage of the No Child Left Behind Act (NCLB). Although NCLB did not require statewide student identifiers, the mandated accountability systems and public reports are much more efficient to implement with a statewide individual student record system than with reports aggregated by schools and districts. To be functional, individual student record systems require unique student identifiers and a sophisticated system for assigning and maintaining them.

ESP Solutions Group's experts have been advising state education agencies for about 20 years. Before ESP was founded in 1993, Glynn Ligon was a district-level representative on an advisory group for the Texas Education Agency when their identifier system was created in the 80's. The first state that ESP Solutions Group consulted with on the creation of statewide student identifiers was Nevada in the mid-90's. Massachusetts, Mississippi, and New York followed with formal studies, recommendations, and designs. By the end of 2004, ESP Solutions Group will have directly advised 18 states related to student identifiers. Many other states have received less formal consulting from ESP Solutions Group through other activities and projects.

States without a student identifier are well positioned to learn from other states that have them.

States with an existing student identifier are constantly asking whether they need to make adjustments or convert to a new system. At times these questions are very quietly and carefully asked, because the legacy inherent in an existing system creates such a financial, political, and practical inertia that even raising the issue publicly is daunting. However, the benefits of converting to a more modern system are well worth the consideration.

Barbara Clements and Glynn Ligon have contributed over the years to NCES publications related to individual student record systems for states. A statewide student identifier is a crucial component of these systems. A copy of the latest NCES publication is available at:

National Forum on Education Statistics. (2000). Building an Automated Statewide Student Record System, NCES 2000324. Washington, DC: U.S. Government Printing Office. [Available at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000324>]

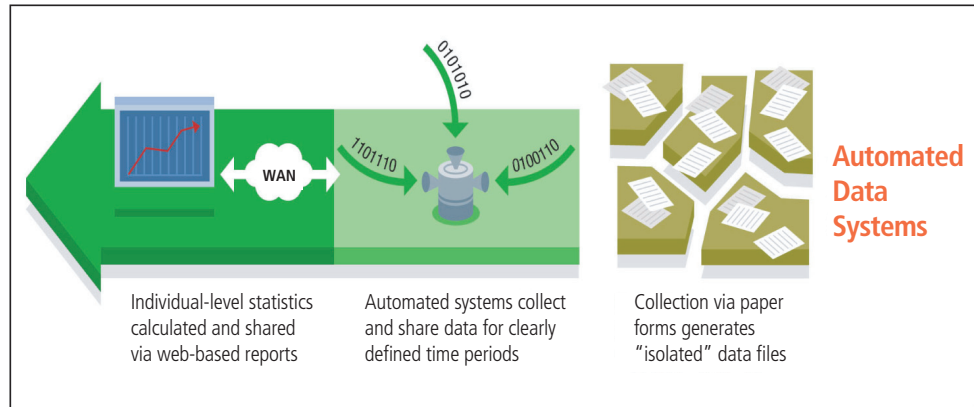
 **ESP Insight**

*Best practices for assigning statewide student identifiers continue to evolve across the states. However, the issues require state-specific solutions.*



# The Case for Student Identifiers

The Secretary of Education commissioned a white paper by Glynn Ligon for the No Child Left Behind Leadership Summit on Accountability and Assessment in March, 2004. The paper, *A Technology Framework to Support Accountability and Assessment: How States Can Evaluate Their Status for No Child Left Behind*, provided an overview of the components required for a states' education information system. A student identifier is an advanced characteristic of the Automated Data Systems component described below.



Data will be collected, stored, and accessed using automated systems (e.g., directories, student/school management [student information system, SIS], discipline, program management, food services, transportation, library, finance, human resources, student performance [assessments], D3M [data driven decision making using a student support system], instructional management).

Component Automated Data Systems		
Basic Implementation	Proficient Implementation	Advanced Implementation
<ul style="list-style-type: none"> <li>Paper forms are used to collect aggregate statistics. Forms converted to the web are not redesigned for efficiency. Validation of entries is minimal.</li> <li>"Stovepipe" data files are used.</li> </ul>	<ul style="list-style-type: none"> <li>Automated data systems collect and share the data efficiently.</li> <li>Collection systems are electronic, typically networked (on-line).                             <ul style="list-style-type: none"> <li>The periodicity (as-of dates and time periods represented) of the data are clear.</li> <li>Longitudinal data points are available for describing trends.</li> <li>Entries are verified and error messages provided.</li> </ul> </li> <li>The systems and their data are interoperable (i.e., capable of moving from one system to another without translation).</li> <li>Permanent, unique identifiers are assigned to students and staff to ensure matching of records.</li> </ul>	<ul style="list-style-type: none"> <li>Individual student and staff records are exchanged with the state where statistics are calculated. Web-based reports provide reports to districts and schools.</li> <li>Programs and offices at the state level access the data they need and are authorized to use. Automated updates of their from schools and districts files occurs as data are verified</li> </ul>

Throughout this paper, the discussion focuses on the student identifier. However, as is evident in our analysis of issues, a fully functional student locator system makes the student identifier viable. Several states initiated the assignment of student identifiers by requiring schools and districts to make the assignments of identifiers and to manage the process of ensuring that students do not receive another one when those students move to another district within the state. Recently, states have concluded that the assignment process and the maintenance of identifiers is so complex and time sensitive that a web-based student locator system is required. These web-based systems allow a school or district to verify that a student already has an assigned identifier, and if not, to get one immediately.

### **Historical Context**

The Migrant Student Record Transfer System (MSRTS) began assigning identifiers to student records 35 years ago. The identifiers were more successful than the overall system, which was abandoned in the 90's.

Florida began the trend of collecting individual student records with unique identifiers in the 1980's. Texas followed. Both states initially used the Social Security Number. In 1997, Nevada became the last state to rely mainly upon Social Security Numbers. Since that time, no state has relied so heavily on the Social Security Number as its primary identifier. In 2004, a random number has replaced the SSN as the statewide identifier in Nevada.

New York's Legislature passed a restriction on the use of the Social Security Number (SSN) and the allocation of ranges of student identifier numbers to districts in 1991. In 2001, the New York State Education Department (NYSDE) found their need for a statewide student identifier system growing with the increasing demands for an accessible, centralized information source for decision making. Currently, NYSDE is planning and developing more automated information systems. These software applications envision information codified to save space and to allow for analysis of information across separate files. Although some extant information systems at the school and district levels may use only the student's name or a local identifier, those that anticipate linking to related information in other files, longitudinal comparisons, or efficient searching for records across districts require this common identifier system.

Wisconsin's SEA staff had concluded that statewide identifiers were useful many years before the political and practical context allowed them to be assigned. During an initial meeting with stakeholder groups in 2003, a lively discussion of issues ended with a consensus that everyone accepted the reality that identifiers are required, but they all wanted to have an active role in designing the policies and processes that would be followed. Assignment of identifiers began in 2004.

Iowa began collecting individual student records from volunteer districts well before implementing a statewide identifier in 2004. This allowed districts and schools to learn how to build and submit individual records and to conclude for themselves that a statewide identifier is worth the effort and that the benefits outweigh the potential problems. A case study of Iowa's process is presented later in this paper.

In Oklahoma, acceptance of their statewide identifier was earned through extensive discussions with both a politically astute steering committee and a technically savvy user working group. By the end of their requirements study, unanimous support had been built for the implementation of the identifier.

Each state has its story. The background information and advice in this paper reflect all of their experiences and approaches to a successful implementation.

### **ESP Insight**

*The remaining states with a statewide collection of aggregate statistics rather than individual student records are seeing the need to assign unique student identifiers as a necessary first step toward a student record system.*

Legislative and parental demands for confidentiality are based upon the function of a student identifier as a key to view (or hack into) a student's record within any system containing personal information. In some states, the identifier contains imbedded information about the student; therefore, knowing the identifier also means a person might know the personal information imbedded.

Concerns about confidentiality of statewide identifiers and the personal data linked to them have been very persistent—appropriately so. The best perspective on these concerns is that major problems with confidentiality have not materialized across the many years and states with statewide identifiers. Confidentiality and security issues are discussed in this paper and in other references. Constant vigilance and careful planning are required to avoid problems.

The Family Education Rights and Privacy Act (FERPA) protects the confidentiality of personally identifiable information in a student's education record.

The identifiers perform a practical, technical function for the SEA. The identifier is the index used by software applications to find an individual student's record(s). In a relational database, the identifier links data about an individual student across separate tables.


With a student identifier assigned, is there a need to store a student's name in a database? Yes, every identifier needs to be verified. Verification requires other pieces of information to determine that the identifier is attached to the correct student's records. This verification does not have to occur within the main database or even within the SEA. For example, there must be a table that crosswalks the identifier to an encrypted identifier that is used more generally across applications. By using data elements such as name, birthdate, and gender the crosswalk, as well as the actual identifiers, can be verified.


### Data Access and Use Policies

An SEA should not publish its technical design and internal processes for maintaining the physical security of its information systems—especially those containing personally identifiable data such as a student identifier. However, the policy and procedures related to data access and use should be published and available to all potential users of the data. A state's data access and use policy is one of the most customized and personal documents associated with a student identifier. Nebraska and Iowa represent the contrasts in contents and requirements that individual states must incorporate. Their documents, created in 2004, can provide an idea of what might be in a final policy, but each state will need to engage in a careful process of reviewing their own laws, regulations, and policies with appropriate stakeholders. (See Iowa Data Access and Use Policy, [www.espsolutionsgroup.com/documents/iadataaccess.pdf](http://www.espsolutionsgroup.com/documents/iadataaccess.pdf) and Nebraska Data Access and Use Policy, [www.espsolutionsgroup.com/documents/nedataaccess.pdf](http://www.espsolutionsgroup.com/documents/nedataaccess.pdf), ESP Solutions Group, 2004.)

ESP Solutions Group, along with individual SEAs, has crafted data access and use policies that reflect each state's laws, regulations, policies, and procedures. This process has involved a review of the state's laws and related documents, published procedure documents, and informal processes being followed. These have been related to the Family Educational Rights and Privacy (FERPA) requirements. The result has been a clear and precise document that specifies the conditions under which personally identifiable data, the student identifier and data linked to it, can be accessed and for what purposes.

This policy and any related state legislation are crucial whenever student data are shared among state agencies.

 **ESP Insight**  
*State education agencies must have in place policies to restrict access to student identifiers so that personally identifiable student information is not disclosed inappropriately.*

 **ESP Insight**  
*The policy and procedures related to data access and use should be published and available to all potential users of the data.*



Some of the key questions that should be addressed are:

- Who owns the data associated with the individual student record?  
For example, if a parent requests a copy of the data within the SEA's information system, can the parent be referred to the district which provided the data or must the data within the state's system be provided?
- Which data elements if any can be shared with other agencies, e.g., postsecondary institutions, law enforcement, other state agencies, etc.
- What data elements are defined as directory information as per FERPA?

Some states use encryption routines for the identifier when a student's record is brought into the SEA's database. This adds a level of confidentiality for internal agency users who have access to the records. When providing files for researchers, SEAs often encrypt the identifiers and remove names from student records. Data elements that identify students as members of small subgroups (e.g., fewer than 10 Asian students performing at the basic level on the state assessment within a school) are also suppressed. The SEAs maintain the encrypted numbers as well as the actual identifiers to allow matching of records across years.

## The Nature of Statewide Student Identifiers

### *What are essential characteristics of a student identifier?*

#### 1. The identifier is a proxy for a student's name.

Some states prefer not to have a student's name in its databases for confidentiality reasons and to reduce the demands for files that might unintentionally disclose personally identifiable data. Some students' names change, the name components get abbreviated, or they are not reliably provided each time a student is registered. At times, when a document should not have a student's name showing, an identifier would be useful.

#### 2. The identifier is unique, unchanged, and unduplicated.

Students move, change names, enter and exit different special programs, and an SEA's databases must be able to link a student's records across time, across files, and across schools. The identifier must be unique to identify one and only one student or records could be inappropriately combined for more than one student. The identifier must not be an alias because the student must have one and only one number, so all of the student's records can be linked into one physical or virtual set. The identifier must be permanent (unchanged) because changes in a student's identifier inhibit linking records. Permanent also means that the SEA or some state-level process must assign and maintain the identifier for each student. States that allow a parent to choose between using a Social Security Number or a state-assigned number must constantly manage changes in the parent's preference.

#### 3. The identifier is ubiquitous while being undisclosed to unauthorized users.

All local and state records that share data must use the same identifier to create a virtual set of records for an individual student. Crosswalk tables can be used to translate the identifier used by one system to the identifier used by another; however, creating and maintaining crosswalk tables add complexity to information systems. This universal usage of the same identifier imposes a responsibility upon the SEA to manage and control access to and use of the identifiers.

## Options for Selecting a Student Identifier

SEAs have adopted a wide variety of identifiers. There is a generally accepted best practice that says the SEA should assign its own identifier, not require (but allow) districts to use it within their local systems, but require that it appear on all state reports. The approaches most often considered by SEAs are categorized below along with an analysis of the advantages and disadvantages for each.

**1. Use Locally Assigned Identifiers.** This option allows each district (or school) to maintain currently assigned identifiers and potentially to assign new identifiers using whatever local process they choose.

Option 1.a. Districts and schools continue to assign and maintain identifiers as is current practice.

Option 1.b. The SEA collects pre-existing local identifiers in year one only, and then assigns all new numbers from the SEA system.

Option 1.c. The SEA adds a district identifier to the front of locally assigned identifiers to make them unique across the state.

**Advantages:** Local control is maintained. Districts and schools are not required to make changes in their local identifier system. Historical local files continue to be compatible with the identifiers. Dependent upon local processes in place, an identifier can be assigned at the time of registration for new students.

**Disadvantages:** Uniqueness across the state is not assured. Mobile students would receive a new identifier in each district/school. The formats and characteristics of local identifiers would have to be considered in the establishing of parameters for acceptable identifiers. SEA's central database design and the checking for aliases and duplications would be more complicated. 1.c might work with a district identifier added to the front of local identifiers to make them unique statewide. However, where the local identifiers are only unique within a school, both a district and a school identifier would have to be added. This has implications for the length of the identifier.

This strategy breaks down when students move from one district to another. Each district would have to accommodate the characteristics of other districts' identifiers or there would be aliases created in the assignment of numbers to individual students. The SEA would have to abandon uniqueness statewide to fully accommodate option 1.a.

Option 1.b would require the setting of criteria for a local identifier to be acceptable, e.g., no longer than the SEA identifier, same characteristics in regard to alpha, numeric, and special characters, etc. This might eliminate too many local identifiers from use.

Option 1.c. works only if receiving schools verify a prior identifier from a prior district rather than assigning a new local identifier. The addition of a three-character district identifier to the front may make the identifier longer than practical for some local student information systems.

**2. Create an Algorithm to Assign the Identifier.** An algorithm could be devised that encrypts the student's name, birthdate, gender, place of birth, and possibly other data elements to create a unique combination. The algorithm could be secured to protect the contents of the identifier; however, the utility of using an algorithm is that someone at any level can generate the same identifier for a student if the personal characteristics are known.

**Advantages:** The algorithm could be distributed as a software application to registrars for use at the time of registration. Parents and students would not have to remember the identifier when they move, nor would registrars have to contact prior schools.

**Disadvantages:** The required length of the identifier to ensure uniqueness might be excessive. Students who have identical names and demographic characteristics would get the same identifier. Twins at times have the same names and identifying characteristics. Students who happen to get the same identifier upon their first registration will always get the same one generated by the algorithm, and will need resolution each time.

A hacker (an unscrupulous computer expert) might obtain or break the encryption routine.

Changes in names or mistakes in the entry of data elements used to run the algorithm would result in incorrect identifiers. Requiring the use of names, birthdates, etc. directly from an official birth certificate would be advisable.

**Alternative:** The algorithm could be used to "estimate" a mobile student's identifier. Some states use a sound/pronunciation approximator to generate possible matches of students in their databases. Then a manual process is used to make the final match.

**3. Assign Identifiers Only at the State Level.** The SEA could create a pool of valid and available identifiers, and students new to the state would be assigned a permanent identifier from the pool.

Option 3.a. A common statewide pool of numbers would be accessed to assign each new student an identifier.

Option 3.b. A block of identifiers from the state pool would be assigned to each local district. The district would manage the assignment process for new students.

**Advantages:** The SEA fully controls the characteristics of the identifiers. The validity of identifiers can be verified by the SEA. Uniqueness is assured within the pool of potential identifiers. Option 3.b. facilitates assignment of identifiers to new students at the time of registration. The identifier cannot be deciphered and directly linked to confidential data sources.

**Disadvantages:** Districts must rely upon the SEA for their identifiers. Access to their identifiers and the ability to assign them at registration will require sound management. This disadvantage has been effectively addressed in states using a web-based student locator system.

**4. Use a Pre-Existing Identifier.** Every state has identifiers in use someplace. Within the SEA, special programs may use identifiers for their own purposes, e.g., special education, vocational education, early childhood, migrant education services, state assessments, etc. Other state agencies may be assigning identifiers to their clients, e.g., health services, Medicaid, drivers license bureau, etc.

**Advantages:** If an existing identifier system has the features and functions to meet the requirements set by the SEA for statewide implementation, then time and costs may be saved. Crosswalking across information systems and conversions to a new system would be simplified if existing identifiers are used.

**Disadvantages:** An existing identifier or system is unlikely to meet all the requirements for a statewide identifier because it was not designed with the same specifications. Making enhancements to an existing system may be more costly than implementing a new system. If the identifier is being assigned by another state agency, then aligning the requirements of the separate agencies will be necessary. FERPA requirements for example would need to be aligned with HIPPA requirements if the other agency manages health records.

**5. Use the Student's Social Security Number (SSN).** Use of the SSN as an identifier is legal and in practice in a number of states. With the requirement by the IRS for dependents to have an SSN, most students enter school with an SSN assigned. The use of the SSN for student identifiers has been a common practice by postsecondary institutions for decades, although some are moving away from this usage.

Option 4.a. Require the student's SSN to be provided at registration.

Option 4b. Encourage use of the SSN, but provide for an alternate identifier at the parent's request.

Option 4.c. Collect the SSN as a data element, but assign another identifier.

**Advantages:** The SSN is unique on a nationwide basis. The SSN is almost universal in its assignment in the U.S. The assignment and maintenance of the SSN system is handled by the federal government; thus, the burden of determining an identifier and assigning it is avoided by SEA. With the SSN, the parent and student can assist in providing the identifier when transferring from one school to another. When students move across states, those states using the SSN can use it to verify records. Postsecondary institutions are assisted in their applications processes when secondary schools can provide the SSN on transcripts.

The SSN can be used to share information or conduct studies across agencies that use it. Some states exchange information about families across agencies to determine eligibility for services. For example, several states use the SSN and other family information to link across Aid to Families with Dependent Children and other public assistance files to establish a student's level of eligibility for the National School Lunch Program, to count the number of economically disadvantaged students to qualify a campus for Title I funding, and to establish a student's eligibility for vocational and job training programs.

More controversial is the ability to exchange student information with law enforcement agencies such as the local police, juvenile justice system, or the Immigration and Naturalization Service. Confirmation of a student's identity and enrollment status can assist their investigations. At times, LEAs and SEAs are legally required to cooperate and provide information. Within that context, ensuring that the information provided actually belongs to the correct individual is crucial.

The SSN is useful when conducting former-student studies. Employers, the armed forces, and postsecondary institutions can use it to correctly match former students with their current employees or enrollees.

**Disadvantages:** Some parents are uncomfortable providing the SSN, others strongly oppose its use. A very small number of students will not have one. Parents have occasionally provided their own SSN for their children.

Because public education agencies cannot refuse services to students who refuse to provide their SSN, to use the SSN, the SEA would be obligated to provide an alternative identifier to parents or students who refuse to provide it. The requirement to design and implement an alternative identifier is equivalent to having two identifier systems in place. Students may move back and forth between the use of their SSN and their request for an alternative identifier. Tracking these changes in a longitudinal database is difficult.

In states using the SSN, an attorney general's opinion, legislative authority, or state board of education authority is typically secured first. Consideration of the SSN adds time and effort to the planning, review, and public comment process.

In contrast to a nominal identifier, the printing or display of the SSN on education documents demands a higher degree of diligence from everyone handling those documents. In fact, some state laws preclude the display of the SSN on student records.

Usage of the SSN varies from state to state. The following counts are based upon results from ESP Solutions Group's visits to every SEA in the summer of 2003 for the U.S. Department of Education's Performance Based Data Management Initiative (PBDMI).

- 5 SEAs use Social Security Number as their primary identifier: Arkansas, Florida, Nevada, Puerto Rico, and Texas. Georgia does not consider its Social Security Number as a statewide student identifier and is implementing a new student locator system in 2005.
- 13 of the 23 SEAs with student identifiers in 2003 did not collect the SSN.
- 10 of the 23 with student identifiers do collect the SSN.

Whenever emotionally charged issues can be avoided without significantly disabling the effectiveness of the statewide identifier, that is the recommended path. Because the SSN can be collected as an additional field in the SEA's information system, it is not essential to use it as the primary identifier. The ultimate argument against using the SSN is that an alternative identifier is required for students whose parents decline to provide it. Thus, two identifier systems must be maintained.

### ESP Insight

*SEAs are well advised these days to avoid an over dependence on Social Security Numbers.*

*Our advice is to use a truly random or sequential number that has no imbedded meaning.*

*Schools and districts should be allowed to continue the use of locally assigned identifiers within their information systems.*

*The specific characteristics of the state's student identifier should be determined in a requirements study that considers all of the issues and options presented in this paper—within the state's unique context. ESP Solutions Group has conducted these studies for eight states, so we understand the importance of building a clear consensus on the expectations, scope, and functions of a student locator system and a statewide student identifier.*

Creating a pool of available numbers for each district can provide them the quickest assignment of a unique number to new students. However, this places a burden on the districts to maintain that uniqueness and to avoid assigning a new number to students transferring from other districts where they previously received a number. The ultimate solution with today's technology is to implement a web-based student locator system that allows schools and districts to search for previously assigned numbers for a student and to request immediate assignment of a number to a student who is new to the state.

The state identifier would be required whenever state reports are submitted, but the local identifier should be a field in each report for verification and linking back to local files as necessary.

For a state education agency (SEA) to assign an identifier to every student statewide, key issues must be identified and resolved. Fortunately, the experiences across many other states can be brought together to inform that decision-making process. This paper describes these issues, provides a discussion of options, and recommends a best-practice decision. The recommended decision is provided for consideration, not as a final decision for an individual state. Each state's unique context and history must be considered to ensure that this general recommendation fits. ESP Solutions Group has conducted many requirements studies with state education agencies during which careful consideration is given to all options by multiple stakeholder groups before a final decision is made by the state.

A statewide student identifier is a "number" assigned to each "student" in a state. Exactly what the definitions are for a number and for a student are among the determinations that must be made related to the issues detailed in this paper. States assign these identifiers because they are the most efficient way to manage individual student records in an automated information system. Data quality across data systems depends upon the accurate linking of records across sources and years. Identifiers are essential to that accurate linking. Confidentiality can be not only maintained but also enhanced using these identifiers when student names appear less frequently in records.

The student identifier must be:


- Unique (assigned to only one student),
- Unchanged (follows the student throughout the school years),
- Unduplicated (only one assigned per student),
- Undisclosed (provided only to authorized persons for authorized uses), and
- Ubiquitous (used by every SEA database/program).

Under these conditions, the SEA can collect and maintain individual student records with which to respond to changes and new information requirements such as those from the No Child Left Behind Act without passing a new burden on to schools and districts.

A glossary of terms is included at the end of this paper.


### *Why do states assign student identifiers?*

- The full benefits of a student record system for state reporting cannot be realized without the assignment of statewide student identifiers.
- Confidentiality is enhanced by using a number in data files in lieu of a student's name.
- A permanent and unique student identifier is the most reliable and accurate way to link across years and different data files for analyses.
- A unique student identifier is the most efficient way to eliminate duplicate records to ensure a single student is counted only once for state funding and program evaluations.
- Statewide database systems run more efficiently using unique and unduplicated identifiers as keys for matching.

 **ESP Insight**  
*The full benefits of a student record system for state reporting cannot be realized without the assignment of statewide student identifiers.*

### *What benefits come from having statewide student identifiers?*


- The student identifier is the initial required component that enables the implementation of an individual student record system, which can reduce reporting burden on schools and districts, increase data quality, and shorten the cycle time for reporting information.
- Mobile students' education records can be transmitted electronically to allow prompt provision of services in a new school.
- Academic growth can be measured across time to evaluate the effectiveness of schools and programs for students.
- Data driven decision making (D3M) supported through the implementation of a decision support system (DSS) is enhanced with the use of student identifiers.
- The quality of data available for D3M is higher when individual student records are available for standardized derivations of official statistics.
- Automated interoperability among software applications requires student identifiers.

 **ESP Insight**  
Automated interoperability among software applications requires student identifiers.

### *What additional benefits can come from statewide student identifiers?*

Statewide student identifiers allow schools and districts to verify the identities of mobile students, but the real benefits come from a student locator system that provides web-based access to student records.

- **Electronic Records Exchange:** The locator can offer a feature to send an electronic request for a student's record to the student's prior school. Alternatively, the database within the student locator system can contain the contents of a transcript. Transaction Set 146, Request for a Student Record, ANSI X12 Standards, SPEEDE/ExPRESS, provides a format for a request. Transaction Set 130 Student Record provides the contents of a transcript. The Schools Interoperability Framework (SIF) Specifications Version 1.5 provides an XML format for student records. A state could develop its own formats; however, being compatible with a national standard allows for exchanges across states.
- **Migrant Programs:** Students eligible for Title I Migrant program services can be identified immediately. This would be compliant with the Federal requirement for timely records exchanges for migratory families.
- **Dropouts:** Tracking and verification of mobile students can reduce reported dropout rates by providing a way to document transfers who otherwise would be considered dropouts.
- **Placement:** The locator has the potential to provide a new school with valuable placement information about the student. Placement in proper courses, support services, and programs can save a new school the time and resources required for assessments. The student can be provided more continuous services and avoid changes that might be required upon completion of a reassessment or arrival of records from a prior school. In addition, students with special needs, e.g., vision or hearing modifications, emergency procedures, or free meals, can be accommodated.

 **ESP Insight**  
The electronic exchange of student transcripts offers timely availability of placement data for mobile students. Electronic exchanges provide authenticated transcripts that save time and money for both the high school and post-secondary institution.

NOTE: The inclusion of data elements useful for placement decisions changes the nature of the locator and raises extended confidentiality and access issues.

*In order to have these characteristics, how must the statewide student identifiers be assigned?*

- A single, unitary process should be established and maintained at the state level.
- Identifiers should be assigned from a pool of valid, unused numbers.
- A new identifier should be assigned only after verifying that the student has not previously been issued an identifier.

*What must the SEA do to manage the identifiers, to ensure their integrity, and to maintain their confidentiality?*

- Establish policies and procedures consistent with both state and federal confidentiality laws regarding student education records.
- Establish access and use criteria, which clearly describe who can use or view the identifiers and for what purposes.
- Create an encrypted student identifier for use when a data file is provided to a qualified researcher or other agency. The encryption algorithm would ensure that whenever an identifier is encrypted that it is the same, so matching records across years, for example, is possible.
- If the SEA uses the SSN as an identifier, then an alternate identifier will be required for students not providing the SSN. The SEA will need to create an internal, permanent identifier for each student that will remain unchanged regardless of changes in the student's use of the SSN or a state alternative identifier over time.

 **ESP Insight**

*Create an encrypted student identifier for use when a data file is provided to a qualified researcher or other agency. The encryption algorithm would ensure that whenever an identifier is encrypted that it is the same, so matching records across years, for example, is possible.*

*What do people in states with individual student record systems and statewide student identifiers say about their experiences?*

- The initial work to implement student identifiers is worth the effort because reporting to the state is simpler, quicker, and less burdensome now.
- The transition to a statewide student identifier and an individual student record system motivates and enables schools and districts to make the technology improvements that all schools and districts must make to manage their work in today's environment.
- Electronic records are more confidential and protected than paper records were. Suppression of small group values that might reveal personally identifiable information about a student can be automated and enforced more successfully.
- When new or changed requirements for statistics about students arise (as No Child Left Behind exemplifies), the state can make the new calculations using the individual student records rather than passing that burden on to the schools and districts.
- The student information system software vendors are key partners in the implementation of the statewide student identifier and the individual student record system. They have accommodated these systems in other states and know what is required in most cases.

 **ESP Insight**

*Electronic records are more confidential and protected than paper records were. Suppression of small group values that might reveal personally identifiable information about a student can be automated and enforced more successfully.*

*What issues must be addressed to achieve both acceptance of and full compliance with a statewide student identifier?*

- Parents, students, educators, and advocacy groups should be shown how the student identifiers will be assigned and managed without revealing personally identifiable, confidential information about individual students.
- Schools and districts should be shown how they can incorporate the student identifier into their local information systems without inappropriate changes and expenses being required.
- Programs within the SEA must agree to comply with the statewide student identifier as the single student identifier for the state.



### *What groups should be a part of the design and information gathering process for developing and implementing a statewide student identifier?*

- State professional education associations
- State legislative representatives
- SEA program management staff
- SEA data management staff
- School and district educators and data managers
- Parent and student advocate groups
- Student information management software vendors

### *What issues must be understood and resolved?*

The issues identified below are interrelated. The options provided for one issue may be directly related to the option selected by a state related to another issue. Therefore, the total solution must be consistent across all the issues.

#### **1. Confidentiality** – Who may know the identifier?

FERPA and local policies will inform the SEA's answer. If the identifier is a nominal code without intrinsic meaning, then it may be viewed as directory information. This assumes that links using this identifier are not generally available to the public. Prudent practice would call for the identifier to be treated as confidential, because knowledge of the number would place the holder one step closer to accessing confidential information.

#### **2. Process** – How do the identifiers get assigned and verified?

- Burden** – What level of burden should be imposed upon local schools and districts?

Burden is defined as the time, effort, and resources required to implement the student identifier system. This includes creating the system, assigning the identifiers, verifying an individual's identifier, and entering the identifiers wherever they are required. Burden also includes the effort to make the transition from an existing identifier system to a new one; or to add the new identifier into an existing system or perform a crosswalk from the local identifier to the state identifier each time a report is exchanged.

Clearly the level of burden must be limited to achieve compliance (both voluntary and practical) with the identifier process. Too high a level of burden will introduce unwanted errors as a consequence of the attention to detail required. Burden must be balanced by benefit. In the case of identifiers for State students, the benefits have already been determined to be high because they are critical to the functionality of the entire proposed individual student record system. The option that imposes the least burden, the use of existing school and district identifiers, fails to provide the functionality required as described in response to other issues. Burden is typically an issue to recognize and to manage.

A moderate level of burden can be achieved by allowing the continuing use of local identifiers within local information systems at the discretion of schools and districts. Crosswalking to the state identifiers at the time of state reporting is commonplace in districts within states that collect individual student records. An alternative is for the state identifier to be recorded in the local information systems as a separate field to be included with data extracts at the time reports to the SEA are created. In cases where the local student information system software does not allow for second identifiers, the crosswalk option would be necessitated. Some districts may indicate that they would prefer to use the state identifiers as their own internal identifiers. Such use could be possible if the SEA used a procedure to further mask the identifiers once the records entered the state database. One state with individual student records uses encryption to alter the identifiers within the state database to provide further security and confidentiality.

#### **ESP Insight**

*Allow only authorized education employees with a need to know to access the student identifier (and student locator system) from the local level. Restrict access within the SEA to authorized users. Build permission tables to manage access for view, copy, and edit actions by file and fields within files.*

#### **ESP Insight**


*Minimal burden must be required at the school and district level to obtain new identifiers and to verify existing ones. The web-based student locator system must be accessible 24/7. Reporting and managing the use of the statewide student identifier within local files along with an optional locally assigned identifier is acceptable burden for schools and districts.*

**b. Assignment**—At what level will the identifiers be assigned to individual students (e.g., school, district, state, national)?

The State SEA must determine the pool of identifiers available to be assigned. However, assignment of the identifiers at the level of registration (either at the school or at the district) provides the quickest and least burdensome alternative. This issue is also related to uniqueness. The schools (or district office where central registration occurs) must follow a procedure that ensures unduplicated identifiers. Therefore, identifiers should be assigned at the lowest level possible without losing their uniqueness.

A reality is that parents and students cannot be relied upon to carry their student identifiers from one school to the next. Mobile families too often cannot identify their last school/district, do not have records with them, and cannot remember student identifiers. Thus, a system must be in place to avoid assigning an alias, a new identifier, when a valid identifier exists.

If a local identifier is to be assigned at registration and used for local purposes, then the assignment of the state identifier can be delayed until some time before the next reporting to the state. If the state identifier is to be used in the local student information system as the primary identifier, then a process for the identifier to be assigned promptly must be in place. An on-line student locator system that provides the identifier to be assigned or a list of available identifiers would be required at registration.

 **ESP Insight**  
*The pool of valid and available student identifiers should be defined and managed at the SEA level. A web-based student locator function should be provided for both batch and individual student assignment of identifiers on demand by the school or district.*

Options for Assignment of Identifiers		State Identifier Assignment Options				
		Block of State IDs Designated for District & Assigned at District or School Level	State IDs Assigned by Web Locator Site at Registration	State ID Assigned by Web Locator Site Later After Registration		State ID Assigned by SEA After Submission of Enrollment File (with a Local ID)
				On-Line	Batch Submission	
Local ID Options	State ID is the Only ID Used Locally	<b>A</b>	<b>D</b>	<b>G</b>	<b>J</b>	<b>M</b>
	Local ID is the Only ID in Local Student Information System (Crosswalked to State ID at Submission)	<b>B</b>	<b>E</b>	<b>H</b>	<b>K</b>	<b>N</b>
	Local and State IDs in Local Student information System	<b>C</b>	<b>F</b>	<b>I</b>	<b>L</b>	<b>O</b>
Verification Options	On-Line	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>
	Batch Report	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>	<b>OK</b>

NOTE: SEA's typically require that their official student identifier appear on all reports and data submissions from the LEA. There is usually not a requirement that the state's identifier be used on all local files and records. A district or school could opt to use its own identifier system for local applications such as scheduling and grade reporting. A crosswalk table could be used to translate local identifiers to the state identifiers whenever reporting to the state is required.

**c. Timing**—When will the identifier be assigned to a student (e.g., at registration, as soon as possible after registration, at the time of the first report to SEA)?

If the state identifier is to be used for local records, schools need an identifier immediately upon enrollment of a new student. Certain forms are completed at that time and begin to go their separate ways. Ensuring that the student's identifier is on each form immediately saves changes and mismatches later. The difference between assigning identifiers immediately and within a few hours is arguable. However, any system that takes days to assign an identifier presents a very different level of burden—and potential for errors that must be cleaned up later. An on-line student locator system that provides the identifier to be assigned or a list of available identifiers would be required at registration.

SEA should require districts to submit enrollment data for students in a timely manner to ensure the data are available to the next district in which the student enrolls—even if the student enrolls and exits prior to a regular submission period.

For districts not using the state student identifier as their local identifier, the timing of the assignment should be any time before or concurrent with the next state reporting. The SEA should require districts to submit enrollment and exit data for students in a timely manner to ensure the data are available to the next district in which the student enrolls prior to a regular submission period.

**d. Verification Level**—Where will the identifier be verified (school, district, state)?

When a student moves from one school or district to another, the student's identifier must be verified upon registration in the new district. Verification is the process made available to ensure that the identifier assigned to a student is valid and correct. Valid means that the identifier is one actually included in the pool of identifiers to be assigned. Correct means that the identifier is accurately matched to the student.

The identifier can be verified immediately upon registration or later as part of a validation process at the state level. The earlier the verification occurs, the fewer changes will be required later if an identifier is changed/corrected. The closer the verification occurs to the parent and student, the higher the probability of accuracy. Verification at the time of registration, when the parent and student are most likely to be present, is best. This requires that the person registering the student be authorized to assign the identifier according to a set of precise rules, or that the person have direct access to the assignment process.

Verification conducted at the state level using available demographics in the database, after submission of individual records is the least efficient. Some correct identifiers can be incorrectly challenged based upon duplications in the data elements used for verification, e.g., students with the same name, birthdate, and gender. In these instances, verification is then delegated back to the school. This state-level verification is a required component of the system, but the frequency of potentially incorrect identifiers can be greatly reduced by adequate controls at registration.

An on-line student locator system would provide the verification necessary.

#### ESP Insight

*For districts using the state student identifier as their local identifier, it should be assigned at registration and be available to school staff when local records are being created. If registration occurs at the school, then the school should be authorized to use the web-based student locator system.*

#### ESP Insight

*The student identifier must be verified at the time of registration, if possible, when parents and students are available to answer questions and provide documents. (The web-based student locator system must be available at this time.)*

**e. Assignment/Verification Process**—How will the identifier be assigned or verified?

The assignment/verification process includes several steps:

- First, the registrar determines if the student already has an identifier assigned.
- Second, the registrar secures the existing identifier or causes a new one to be assigned.
- Third, the registrar records the identifier in local records for use in state reporting.


The registrar can accomplish the first step by asking the parent or student, or examining paper or electronic records from a prior school. Parents and students too often do not have the records, and at times cannot precisely identify contact numbers or addresses for the prior school (e.g., districts with county or descriptive names rather than city names). In the case of migrant worker families, enrollment in a prior school may have been too brief to generate an official record.

An alternative is to establish a statewide reference file (student locator system), such as a web application, that can be queried to determine the existence of a previously assigned identifier. The registrar could access the student locator system during the registration process. The second step could be accomplished using the statewide student locator system to learn the identifier or to request assignment of a new one. In the absence of such a system, the registrar must contact the prior school. This is a crucial point. Students who have existing identifiers can be assigned an alias identifier simply because that is easier than contacting a prior school, or because the prior school cannot be contacted or does not respond promptly. This might result in duplicate identifiers for a single student, rather than a single unique identifier. If such a number is meant to serve as a temporary placeholder for the unchanged identifier, procedures would be needed to replace the temporary identifier with the unchanged identifier as soon as possible.

**Batch Processing**

At key times, there will be a large number of students registering or needing a new identifier at the same time. This occurs at the beginning of a school year, but also can occur during the pre-registration of kindergarten and first-grade students. Batch processing is the uploading of a file containing multiple student records to a student locator system for assignment of student identifiers. Especially during the initial assignment of identifiers statewide, there may be the need to schedule districts to avoid overloading or unnecessarily slowing the student locator system's processing.

A standardized file format containing the necessary identification data elements will need to be adopted.

 **ESP Insight**  
*Especially during the initial assignment of identifiers statewide, there may be the need to schedule districts to avoid overloading or unnecessarily slowing the student locator system's processing.*

### ***Student Record Submissions and Identifier Assignments***

Assigning the student identifiers is a separate process from the submission by schools and districts of their scheduled data reports. The identifier process needs to be an on-going, on-demand process for schools. The SEA scheduled data submissions typically occur three to five times annually. Each submission period contains data that are appropriate to the time of year they are collected (e.g., beginning of the year, mid-year, end of the year).

### ***The Matching Process***

States vary in how precise their rules are for matching student records. The matching process compares one student's data elements with another's to determine if the two students are the same. Because names change and other student data may be corrected or entered incorrectly, this matching process should take into account near matches as well as exact matches. Although student locator systems and identifier assignment processes vary in whether they calculate a percent or determine a category, generally these determinations are made.

- Match: The records being compared are identical to a degree that the system is confident that they represent the same student. In these cases, a previously assigned identifier is used.
- Near Match: The records being compared are similar but not exact. More than one record already within the system may be a near match with a new one. The system should return to the user a list of the near matches and their characteristics to allow the user to select the one that is the correct match. If one of the near matches is the same student as determined by the user, then the user indicates there is a match. If none of the near matches is determined to be the same student, then the user requests a new identifier to be assigned.
- No Match: The record submitted does not match any already in the database, so a new identifier is assigned.

The SEA must select the rules for determining the cut points between matches and near matches, and between near matches and no matches. These decisions should be based upon sample data runs that estimate the number of matches and near matches generated by actual student records and the potential number of cases that will require manual resolution.

#### **f. Verification Data Elements**-What data elements are required for verification of a student's identifier?

When a student's identifier is in doubt, other unique combinations of information about the student must be used for verification. This is typically "directory information" as defined by the Family Educational Rights and Privacy Act (FERPA) along with a few other pieces of information included to increase the probability of describing a single student.

#### **ESP Insight**

*Because names change and other student data may be corrected or entered incorrectly, this matching process should take into account near matches as well as exact matches.*

 **ESP Insight**

*Include as many data elements as practical in the verification resource. Define verification elements as directory information. Elements not defined as directory information can be used for matching, but not displayed for the user.*

Directory information typically includes:

- Name (First, Last, Middle, Generation Code)
- Birthdate
- Gender
- Grade Level
- Prior Schools/Districts of Enrollment, Enrollment Dates

Additional detail information could include:

- Race/Ethnicity
- Place of Birth
- Parents' Names
- Date of First Immunization
- Prior Schools/Districts of Enrollment, Enrollment Dates

Security and confidentiality issues must be considered. However, the more information available for query, the more likely existing identifiers will be found and used.

One state provides for a two-phase identification system. If the use of directory type data elements results in multiple matches, then other data elements, such as parents' names, race/ethnicity, and place of birth, are made available to the registrar for making a correct identification.

There is the possibility that parents would not approve the release of their children's information for inclusion in this locator system, should they be given the option to not comply. If this occurs, there may be a need for a flag in the locator system database that the information cannot be released and the SEA will need procedures to work directly with the person doing registration to determine if the suppressed student is the one being enrolled.

### **No Child Left Behind Data Elements**

The No Child Left Behind Act requires identification of specific characteristics about each student for determination of adequate yearly progress and publication of annual school, district, and state report cards. The student identifier is essential for linking across various sources of data within unit record databases to compile these characteristics. The student locator system requires only the basic elements described above for its matching process. However, the locator system may be, for convenience or quality control, part of or even the primary source for these student characteristics for No Child Left Behind purposes.

From the basic elements for the student locator system, these are necessary for No Child Left Behind analysis and reporting.

- Gender (Directory Information)
- Race/Ethnicity (Additional Information)
- Grade Level (Directory Information)
- School, District Enrollment Dates (Directory Information)

The following additional student-level data elements are required for meeting the No Child Left Behind analysis and reporting requirements.

- Disability Status (Yes/No)
- Limited English Proficiency Status (Yes, No; Years in School, Program, and/or LEP Status)
- Migrant Eligibility Status (Yes, No)
- Full Academic Year Status (unless derivable from detailed enrollment dates and locations) or School, District, and State Independently
- Graduation On-Time Status (Yes, No; or Details Required for Determining State's Definition for a high school's additional indicator status)
- Truancy Data (as Required to determine the state's approved definition of truancy for calculating rates)
- Discipline Incidents (as required to determine state's definition of persistently dangerous schools)
- Attendance (as required to determine state's definition of attendance rate for elementary and middle school additional indicator status)
- Other Indicator (as required to determine state's definition for other additional indicators)
- Performance Levels on State Assessments

### **Pre-Coding Assessment Documents**

A significant benefit from individual student records with unique student identifiers is the capacity to pre-code answer documents for the state's assessment program. Pre-coding is the provision to the assessment manager of individual student records containing the information typically hand bubbled onto answer sheets prior to testing. Pre-coding is a major contributor to data quality, quicker reporting of results, and reduction of burden on school staff.

The data elements described for No Child Left Behind are the ones most commonly pre-coded.

#### **ESP Insight**

*A significant benefit from individual student records with unique student identifiers is the capacity to pre-code answer documents for the state's assessment program.*

### **3. Characteristics**—How are the identifiers created?

#### **a. Uniqueness**—At what level must the identifiers be unique (e.g., school, district, supervisory union, region, state, nation)?

An identifier must be unique, i.e., assigned to a student only one time. Within a population, the identifier must not be an alias for a single individual within the population. An alias is a second identifier for the same student. Thus each student must be unduplicated within the database. The population defined here encompasses all elementary and secondary students in State. Therefore, uniqueness must be maintained at the state level. The current student identifiers assigned by local schools and districts to their students are not unique across all districts. In fact, some commercial student information systems adopted by districts or schools may provide uniqueness only within a school building for a single year.

#### **ESP Insight**

*Ensure student identifiers are unique at the state level.*

Statewide uniqueness can be achieved if districts assign identifiers that are unique within the district if the numbers also begin with a unique, state-assigned district number. However, this complicates the process of verifying and using those same numbers when students move across districts. The variance in the length of identifiers (number of characters) across districts also complicates this option.

There are certain benefits to using an identifier that is unique nationwide. At this time, the only such identifier is the Social Security Number (SSN). The SSN provides functionality for tracking former students into postsecondary education, career technology education, and the State workforce. It also enables verification of the identity of students across states (with other agencies using the SSN), and exchanging useful data with other state and federal agencies that provide services to families and individuals (e.g., verifying eligibility for services). These benefits can also be achieved by collecting the SSN as an additional data element irrespective of its use as the student identifier. However, every student may not have an SSN, some parents will choose not to provide the SSN to the school, and use of the SSN raises other confidentiality issues.

### **b. Imbedded Information**—What meaning will be built into each number?

The SSN has no useful intrinsic meaning imbedded in the numbers. (Generally, the number may imply a region, year of assignment, or sequence, but any algorithm producing the number is obscure.) Imbedded information typically adds to the length of a number. For example, county/district codes may add six characters to a number. Birthdate may add eight. A truly unduplicated, random number carrying no meaning has the advantage of requiring less restrictive security and confidentiality precautions. If the district number is imbedded, this could identify the student's first district of enrollment; however, that information can be carried in other fields within the database as well. In fact, any useful information that might be imbedded in the identifier can also accompany the identifier as a separate field.

Although unusual, directory information about a student can change. Names change. Even birthdates and gender can “change” when errors are corrected—or made. Any of these changes would require either a change in a student's identifier or would create an anomaly, which would require a process to document.

### **c. Length**—How many characters can be in each number?

Shorter numbers can be entered, transcribed, and maintained with fewer errors. A common length provided for an identification number on generic scanner documents is 10. The SSN is currently 9, but moving to 10 numbers has been discussed. To accommodate 800,000 active students in State and to retire numbers for former students for 100 years, requires 8 numbers, but would use only about 12% of those numbers. This provides 100 million minus one unique numbers.

### **d. Characters**—What should be the nature of the characters in the identifier?

Any number, letter, or symbol could be used. Symbols and letters present problems with recognition and accuracy in entering—especially when mixed with numbers. Certain letters (e.g., o, l, i, z, E, b/d, q/p) are sometimes confused with numbers or each other. Using both numbers and letters provides for many more combinations for unique identifiers, and thus the ability to have shorter identifiers. Problematic numbers and letters could even be eliminated from use (e.g., neither 0 nor o ever assigned). Some state systems use letters and numbers in combination (e.g., a state assigned number beginning with a letter to distinguish it from an SSN).




*Do not imbed information  
in the student identifier.*



*The student identifier must  
be limited to no more  
than (10) digits..*




Letters require 26 bubbles for each character on a scanner form compared to 10 for numbers. Combinations of letters and numbers require 36 bubbles. Letters come in capital and lower-case forms that may or may not have meaning, but often cause confusion as to their use. Numbers are easier to distinguish from each other, they can carry intrinsic and extrinsic meaning, and they are more “universal” across languages and cultures. Numbers can be assigned without risking the creation of meaningful and undesirable combinations as with letters. Even in the absence of considerations that require restricting the length of the identifier, use of only numerals is preferable. They are easy to distinguish. They can be entered with efficient keystrokes using a number pad. They require less space and are associated with less bubbling error on scanner forms.

 **ESP Insight**  
Use only numerals for the student identifier.

**e. Rubric**—What conditions will be imposed on the numbers?

If an algorithm or imbedded meaning is to be used, then the business rules adopted will answer this question. However, if a random number is used, then several rules can be followed to reduce data entry and clerical errors.

Leading and final zeros are sometimes accidentally, or by software design, dropped when numbers are entered or moved across databases. When the remaining numbers are justified left or right, then a reader or a computer application can misinterpret the identifier. Consecutive identical numerals may be incorrectly entered too few or too many times. Some sequences, such as 666, may have connotations that are best avoided. Therefore, limiting the number of consecutive digits that are the same to two or three can reduce errors and other problems. Rules avoiding repeating digits should also apply to a check digit if one is added to the end of the identifier.

 **ESP Insight**  
Use unduplicated, random numbers, no alphabetic or other characters. Use no initial blanks or zeroes or final zeroes. Use no sequence of three or more identical numerals. (Calculate a check digit that can be used as a final digit.)

Leading and final zeros are sometimes accidentally, or by software design, dropped when numbers are entered or moved across databases. When the remaining numbers are justified left or right, then a reader or a computer application can misinterpret the identifier. Leading zeroes are much more problematic than are trailing zeroes. In fact, if a check digit is used, zero may be acceptable as a final, trailing digit. Eliminating all the cases described above would reduce the available pool of numbers.

A final check digit (a number calculated by formula from the other digits) is sometimes used to provide a quick way to locate invalid numbers. With this methodology, if the verification formula checking the validity of a number does not generate the final digit as in the number reported, then there is an error. If a check digit is used, then the potential identifiers eliminated because they end in zero could be assigned. Options for calculating check digits allow the SEA to determine whether or not zero is a valid value. Mod 10 methodology will produce check digits from 0 to 9. Mod 9 can be used to produce values from 1 to 9 if a final zero is not desired.

The check digit does not have to be a part of the identifier. The digit can be held in a separate field accompanying the identifier. With this option, the check digit may not always be exchanged and available to users.

### *What process should the SEA use to make decisions related to each of these issues?*

Best practices have developed across the 18 states that ESP Solutions Group has advised in the decision making process for statewide student identifiers. The following high-level outline provides insight into the key tasks and the people involved throughout the planning and implementation process.


#### Background

Assemble the background information and create the leadership groups to guide the decision making process.

- ☑ Appoint or Designate the Leadership Groups
  - Steering/Policy Committee (Agency, Legislative, District/School, Community, and Business Leaders)
  - User Group (District/School, Agency Users)
  - Internal SEA (Agency Technical, Program, and Policy Staff)
- ☑ Document Current Laws/Policies
  - Related to identifiers, Social Security Numbers
  - Related to the Acquisition and Maintenance of Personally Identifiable Records
  - Related to Privacy, Confidentiality, Access, and Uses of Data
- ☑ Best Practices
  - ESP Solutions Group Best Practices for Education Data Management Brief
  - Reviews of Peer States
- ☑ Survey of Districts
  - Student Information Systems in Use
  - Network Infrastructure
  - Local Identifiers in Use
  - SIF Planner Results
- ☑ Other identifiers
  - Special Programs
  - Other Agencies
- ☑ Technology Standards
  - State Education Agency Standards
  - State Government Standards
  - National Standards
- ☑ Requirements
  - Student identifier Characteristics
  - Identifier System Functions
  - Identifier System Specifications
  - Buy or Build Recommendation

#### Decision

- ☑ Recommendations
  - Internal State Education Agency
  - User Group
  - Steering/Policy Committee
- ☑ Approval
  - State Education Agency Staff
  - Leadership
- ☑ Proposals/Plans – Bids/Build
  - RFP/Build Plan
  - Proposal/Review
  - Selection/Approval
- ☑ Purchase/Funding
  - Contract/Budget
  - Project Plan

 **ESP Insight**  
*Involving school, district, SEA, community, businesses, legislators, employee groups, and other stakeholders in the decision-making process for statewide student identifiers creates a consensus supporting their use and agreement with their characteristics.*

### What process should the SEA use to assign and maintain the student identifiers?

Graduate Student : “Why can’t I just build a web site and post numbers. Schools could go to that web site and get a number each time a student enrolls.”

Glynn Ligon : “That would give students a number on the first day of the system, but the challenge is day two when the students start moving around.”

The following processes describe best practices.

#### Implementation

- ☑ Project Management
  - Kick-off Meeting
  - Project Plan Final
  - Management Web Site
  - Periodic Meetings
  - Periodic Status Reports
  - Change Management Process
  - Deliverables
    - o Review
    - o Revise
    - o Accept
  - Steering/Policy Committee Review
  - User Group Review
  - Internal State Education Agency Review
  - Vendor Training
  - Vendor Certification

#### ESP Insight

*Assigning and maintaining student identifiers is a process that is much more complex than it appears on the surface. Project management is a crucial component for a successful implementation.*

#### Tasks

- ☑ Data Standards Adopted and Published
- ☑ Submissions Defined and Scheduled
- ☑ Documentation Published
- ☑ Hardware/OS/Network Installed
- ☑ Student Locator Application Installed, Tested, and Accepted
- ☑ Pilot/Test Data Processed
- ☑ User Interface Finalized and Accepted
- ☑ Matching Rules Finalized
- ☑ Authority Tables Built and Populated
- ☑ Vendor Training Delivered
- ☑ Training Delivered
  - SEA Administrative Users
  - School and District Users
- ☑ Initial Upload/Assignments\* Processed
- ☑ Periodic Batch Uploads/Assignments\* Processed
- ☑ On-Demand Requests for Individual Assignments Processed
- ☑ SEA Support/Help Provided
- ☑ Problem Resolution Provided
- ☑ Management/Evaluation Conducted
- ☑ Advisory Groups Formed and Assembled
- ☑ Upgrades/Enhancements Implemented
- ☑ Interoperability with Other Systems to Share Data Implemented

\* Initial Upload/Assignments place a heavy burden upon the new student locator system. Large batch uploads must be anticipated from districts. The SEA may need to schedule large districts for their uploads to ensure that the system can manage the processing without unacceptable delays for all users. Periodically, large batches should be anticipated as kindergarten/first grade pre-registrations, beginning-of-the-school-year registrations, and other peak times occur.

### ESP Insight

*From signing the contract in January 2004, to turning over the virtual key to the system in June, the implementation was on a fast track to have identifiers assigned for the beginning of the 2004-05 school year.*

An illustrative case study of how Iowa approached the assignment of student identifiers and the implementation of their student locator system is the best way to describe the processes. Iowa's experience was presented at a session during the 2004 National Center for Education Statistics (NCES) Summer Data Conference.

Beginning in 1996, the Iowa Department of Education (IDE) created Project EASIER (Electronic Access System for Iowa Education Records), a voluntary process for districts to submit individual student records electronically for state reporting. Locally assigned identifiers or social security numbers, to the extent they were available, were used as record identifiers. The initial process required the submission of a limited number of data elements to replace seven existing IDE data collection documents. With the implementation of No Child Left Behind (NCLB) and Performance Based Data Management Initiative (PBDMI), IDE moved from a voluntary system to a mandatory system beginning in the fall of 2004. The mandatory system required the use of a unique state assigned identifier. Through a competitive bidding process, the IDE awarded a contract to ESP Solutions Group to manage the implementation of state assigned identifiers, using eScholar's Uniq-ID student locator system.

From signing the contract in January 2004, the implementation was on a fast track to have identifiers assigned for the beginning of the 2004-05 school year. IDE committed the time and expertise of its staff for planning and testing of the system, as well as for training and supporting local districts.

ESP Solutions Group helped guide IDE through the process of crafting a data access and use policy and defining the data elements that would be used in the student identifier locator system. These data elements would be used for verifying new students or matching new students' data to existing records. ESP Solutions Group also assisted in resolving design and implementation issues as they arose during the project.

Though, implementing the identifier locator system within the allotted time frame was not without notable hurdles. First, the interface between the new software and the Department's existing Project EASIER's data collection system required several iterations and considerable communication so that it "fit" within IDE's current efforts. Server hardware and software requirements were reviewed as the new application was initiated and substantial improvements/changes were made to improve capacity and speed.

Second, the timing of the initial assignment of identifiers and the training of district staff needed to occur at the end of the 2003-04 school year, during the summer, and before school started in the fall of 2004. Staff in many districts, especially small ones, are not necessarily available throughout the summer months and hence not available to upload files, resolve identifier issues, and download files. To accommodate this issue of district staff availability, the project plan had to be modified, with the identifier assignment broken into three parts: uploading files, resolving near-matches, and downloading files.

Third, the number of assistance calls to IDE from districts uploading their initial files was significant, and considerable staff time was devoted to providing one-on-one assistance to districts.

Fourth, the system was initially too slow for districts to use, especially if files were large. After several optimizations, the speed of the system was increased to the point that each student's record was processed for potential duplicates and the assignment of an identifier in an extremely short time regardless of file size. Since this was the initial population of the identifier locator database, the system operated in a conservative manner in that a large number of near matches were identified which then required staff review. However, even with a conservative approach, only about 3 percent of the student records had to be processed by hand to resolve matching issues.

Fifth, files with the assigned identifiers were not available to districts for download until the start of the 2004-05 school year. This was partly a staff timing issue due to the identifier project being initiated in the spring and needing to be completed over the summer. Yet, this also was a system issue associated with initial population. None of these issues prevented the successful implementation of the project.

Advice from IDE staff includes:

1. Communicate clearly to the educational community regarding what the identifier initiative includes and why it is being done;
2. Anticipate the need to support local district staff on a one-to-one basis;
3. Although the ending timeline is fixed, be flexible when preparing the implementation timeline, and
4. Run a test server that is identical to the production server.

ESP Solutions Group built and maintained a detailed project management web site in collaboration with IDE which provided a reliable resource for project documentation, plans, and weekly/monthly status reports. A tour of that site is available by contacting [jgoodman@espsolutionsgroup.com](mailto:jgoodman@espsolutionsgroup.com)

## Involving Software Vendors

Software vendors are partners with the local schools and districts in the process of maintaining the integrity of the student identifiers and submitting student records to the SEA. These vendors have a vested interest in providing their school and district clients with functional and compliant software. The larger vendors have addresses similar issues related to identifiers in other states. They understand that each state's requirements are unique.

An early meeting with vendors to keep them informed has been a successful approach by many states. On-going vendor registration for updates and future meetings is also a positive process. These procedures also support the SEA in being open and fair with all vendors.

States vary in how they manage the vendors and their applications. Models include:

- Certification of software applications before they can be used by a school or district for state reporting
- Certification of software applications, but local decisions allowing use of uncertified applications if the school or district accepts responsibility for meeting state requirements
- Registration of vendors or software applications, signifying only that they are known to the SEA and are registered to receive documentation and attend meetings
- Provision of documentation and requirements publicly to any vendor seeking them
- Dependence upon schools and districts to communicate requirements to their vendors

### ESP Insight

*Software vendors are partners with the local schools and districts in the process of maintaining the integrity of the student identifiers and submitting student records to the SEA.*

## Coordination Between the State and the Districts

### ESP Insight

*The SEA needs the cooperation of school and district staff to make the identifiers and the student locator system work.*

Clearly, the use of a statewide student identifier imposes requirements upon local schools and districts. However, the identifiers also bring benefits to them and opportunities to leverage the identifiers for local purposes. The SEA needs the cooperation of school and district staff to make the identifiers and the student locator system work. Strategies for working together include:

- SEA understands the status of student information systems and networks across all districts and schools and incorporates their capacities into design and planning activities.
- SEA aligns the student locator system with local practices and provides support to make the local transition to updated systems and processes.
- SEA involves schools/districts in planning, review, and on-going oversight.
- SEA adopts and publishes standards.
- SEA adopts and publishes policies.
- SEA provides user training and ensures participation.
- SEA provides user support for applications developed associated with the use of the identifiers.
- SEA involves vendors in the training and communications processes.
- SEA focuses on goals: reduce burden, reduce cycle time, increase D3M.

## Buy or Build a Student Locator System?

### ESP Insight

*Building a student locator system is a major design and development project.*

*An SEA is likely to underestimate the time, costs, and resources required to build. The full set of features and functions available in a purchased system will be difficult to match in a system built in-house..*

Should a state buy or build its own student locator system? This buy or build decision may best be answered by examining the SEA's history of success in building other software applications—especially recent ones with a heavy reliance upon a web interface. The complexity, security, and response-time issues require a degree of technical expertise that is not typical in an SEA.

Agencies can underestimate the time and resources required to build rather than to buy. A commercially available product has typically gone through extensive analysis of user requirements. The SEA can require a real-time demonstration of the application. The SEA can contract for implementation for a fixed amount to manage expenses. The technical expertise and knowledge of the business rules required to deliver the functionality of a software application are not always available within an SEA. On the other hand, an off-the-shelf product, even one that comes with extensive customization, may not provide all the features and functions desired.

Some questions that an SEA might ask when considering the buy or build decision are:

- Have we successfully designed and built a software application similar to this one?
- How easily can we write out the specifications to a level of detail required for development?
- Who will do this design and development? If it is someone already here, who would do their regular work?
- Why would we build this? To save the purchase amount? To save the on-going license fees? To implement earlier? To get features otherwise not available? To be sure it works?
- Does an acceptable product exist?

## Requirements for a Request for Proposals

A student locator system has a finite number of functions, unlike a school's student information system, which can include almost any functionality someone can envision. The Indiana Department of Education has demonstrated that an SEA can build a student locator system. (They used a local contractor for the coding.) The Indiana Department of Education has additional enhancements they are considering, but they implemented within their original time frame.

Technology @ Your Fingertips provides some advice on the buy or build decision process.

U.S. Department of Education, National Center for Education Statistics. (2001). Technology @ your fingertips: A Guide to Implementing Technology Solutions for Education Agencies and Institutions, NCES 98-293. Washington, DC: Author. [Available at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=98293>]

## Requirements for a Request for Proposals

The procurement process varies considerably across states. An SEA will need to follow the prescribed procedures for large state contracts. ESP has created a new document that is of tremendous value for any SEA working on an RFP for a new statewide student identifier system. Over the past several years, ESP has assisted numerous states on their RFP's. Much of that out-of-date work is now being republished and circulated by other entities. The Optimal Reference Guide: Requirements for a Request for Proposals for Statewide Identifiers, is ESP's updated and enhanced guide to producing an RFP in today's environment.

### ESP Insight

*The SEA should include in its requirements for a student locator system (or statewide identifier) all of the decisions related to the issues identified in this paper. These decisions should not wait to be made until after a purchase is made.*

## Schools Interoperability Framework (SIF)

SIF™ standards allow districts to submit state reports containing individual student records with a direct movement of data from their local information system into the state's system. At the end of 2003, through a contract with ESP Solutions Group, Wyoming developed a statewide design for using SIF standards for connecting all software applications at the school, district, and state levels. The student identifier is the key number that links and verifies records across all these systems. Oklahoma has a state law that requires education software applications to be SIF compliant in order to facilitate both local data management and state reporting.

ESP has developed an illustration, entitled "Secretary to Secretary: The Path from Data to Decisions," that describes the path that data follow when traveling from a school to the federal level. This illustration tracks data about an individual student from the time a school secretary enters them into the student information system to the time the U.S. Secretary of Education views a report with aggregate statistics that include the student's data.

ESP Solutions Group, 2004. Secretary to Secretary: The Path from Data to Decisions. [www.espsolutionsgroup.com/s2s](http://www.espsolutionsgroup.com/s2s)

### ESP Insight

*ESP Solutions Group has modified a SIF draft of specifications for SIF compliance to be used in RFPs for software applications. (See SIF Requirements for Software Systems, ESP Version 1.1). SIF standards should be at least one of the options available to districts for submitting their state reports containing individual student records.*

## Training

### ESP Insight

*The training component should be a major part of either the SEA's proposal process or be provided using internal SEA resources.*

Training is required for the SEA technical staff managing the hardware, software, and network associated with the student locator system. User training can be provided using several models.

- Train a representative from each district, then rely upon them to train others in their district
- Train everyone who may use the system either in large meetings or using web conferencing facilities

The training component should be a major part of either the SEA's proposal process or be provided using internal SEA resources.

A significant aspect of the training must be the consideration of how to respond to staff turnover at all levels

## Afterword

This paper makes a clear case for the necessity of a statewide student identifier for every state.

Even states with an existing identifier have new technologies and solutions available now that can make their systems more efficient.



**Aggregate Record**

A value that is calculated from individual (unit) records, a statistic that describes a group

**Algorithm**

A business rule that defines how a number is derived; A rubric that applies a set of rules to create a student identifier

**Alias**

A duplicative student identifier assigned to a student who already has an identifier assigned

**Block**

A set of numbers assigned, designated, or reserved for assignment to students by a specific district

**Check Digit**

A number that is derived from a set of numbers; used to verify the validity of the set of numbers

**Crosswalk**

To change a number within one system to a corresponding number in another system

**D3M**

Data driven decision making

**Data Warehouse**

Consolidated database that provides a shared resource for analysis and reporting

**DSS**

Decision support system

**Encrypt**

To change an identifier to another number that cannot easily be deciphered to the original number

**Encrypted Identifier**

The identifier that results from encrypting another identifier

**FERPA (Family Educational Rights and Privacy Act)**

1976 federal law establishing a family's right to have certain personally identifiable data about a student protected from public exposure

**Identifier**

A number that represents an individual

**Individual Student Record System**

A data collection, storage, and reporting system that contains individual (unit) records for students

**Leading Zeros or Blanks**

Zeros or blanks that occur at the beginning of a number

**Random**

Numbers in no particular order, e.g., 28473645, 94273843, 18365384

**SEA**

The state education agency

**Sequential**

Numbers in sequential order, e.g., 28473645, 28473646, 28473647, etc.

**SIF™**

The Schools Interoperability Framework Association's standards for exchanging data among education information software applications

**Student Information System (SIS)**

A software application that performs basic student information functions for a school, such as enrollment, scheduling, attendance accounting, and grade reporting

**Student Locator System**

A web-based application that allows users to look up a student's state-assigned identifier or to obtain a new one

**Trailing Zeroes**

Zeroes that occur at the end of a number

**Transcript**

The official education record for a student

**Ubiquitous**

Identifier that is used in all records for all purposes across an entity

**Unchanged (Permanent)**

Identifier that is the same for an individual as long as records are maintained

**Undisclosed**

Limiting access to the identifier to authorized persons for legitimate purposes

**Unduplicated**

When a student receives only one identifier; no aliases are created

**Unique**

When an identifier is used for only one individual

**Unit Record**

A record (set of data) containing data for only one individual



### About ESP Solutions Group

ESP Solutions Group provides its clients with *Extraordinary Insight™* into K-12 education data systems and psychometrics. Our team is comprised of industry experts who pioneered the concept of “data driven decision making” in the 1970’s and now help optimize the management of our clients’ state and local education agencies.

ESP personnel have advised all 52 state education agencies as well as the U.S. Department of Education on the practice of K-12 school data management. We are regarded as leading experts in understanding the data and technology implications of the **No Child Left Behind Act (NCLB)**, **Performance Based Data Management Initiative (PBDMI and EDEN)**, and the **Schools Interoperability Framework (SIF)**.

Dozens of state education agencies have hired ESP to design and build their statewide student record collection systems, federal reporting systems, student identifier systems, data dictionaries, evaluation/assessment programs and data management/analysis systems.

To learn how ESP can give your agency *Extraordinary Insight™* into your K-12 education data, contact Mark Johnson, Chief Operating Officer at toll free (888) 828-6480 x107 or [mjohnson@espsg.com](mailto:mjohnson@espsg.com).

This document is part of *The Optimal Reference Guide Series*, designed to help educational data decision makers analyze, manage, and share data in the 21st Century.

The Optimal Reference Guide, Statewide Student Identifier Systems, Copyright © 2004 by ESP Solutions Group. All rights reserved. No part of this paper shall be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission from the publisher.



## ESP Solutions Group

(512) 458-8364

[www.espsolutionsgroup.com](http://www.espsolutionsgroup.com)

**Austin, TX Office** 1510 W. 34th Street, Suite 200 Austin, TX 78703  
**Washington, DC Office** 3504 Holly Street Alexandria, VA 22305